



Installation Manual

V3.1

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1. Introduction and Purpose

Thank you for purchasing the BellMinder timer solution. We believe and others think BellMinder is the best school bell ringing system available.

The BellMinder solution is a two part system:

1. The Windows software designed specifically to make scheduling an easy and reliable process.
2. The BellMinder controller - the hardware component of the system.

This manual is intended to give the installer directions for installing all aspects of the BellMinder system.

2. Copyright Notice

Techenz Limited and BellMinder, All rights reserved.

Under the copyright laws, this manual and the software described within can not be copied, in whole or part, without written consent of the manufacturer, except in the normal use of the software to make a backup copy.

The same proprietary and copyright notices must be affixed to any permitted copies as were affixed to the original. This exception does not allow copies to be made to others, whether or not sold, but all of the material purchased (with all backup copies) can be sold, given, or loaned to another person.

Specifications and descriptions can change without notice.

3. Limited Warranty

Techenz Ltd warrants the BellMinder appliance (the product) for one year from the date of purchase against defects in materials and workmanship. If there is a defect in the hardware, Techenz Ltd will repair, replace or refund (Techenz Ltd discretion) the Product, provided that it is returned to Techenz Ltd with transportation prepaid. A Return Materials Authorisation (RMA) number must be included with the product or the product will be refused. The RMA number can be obtained by calling or emailing Techenz Ltd support.

Phone: New Zealand (64) 9 274 9008
 New Zealand free dial 0800 BELLMINDER (235 564)
 Australia free dial 1809 14657
Fax: New Zealand (64) 9 299 2294
Email: support@techenz.com

This warranty does not apply if the product has been damaged by accident, abuse, misuse, misapplication, lightning strike or has been modified without written permission of Techenz Ltd.

In no event shall Techenz Ltd or its suppliers be liable for damages whatsoever (including without limitation, damages from misapplication of the product, damages for loss of profits, business interruption, loss of information, or other pecuniary loss) arising out of the use of or inability to use the product.

By using the product, you agree to these limitations of liability.

3.1 Acquiring Software Upgrades

Software upgrades will be made available at www.techenz.com.

Upgrades will resolve any issues that arise and extend the functionality of the system.

Bug fixes for any major bug will be available as a free download.

Upgrades to increase functionality may incur an upgrade charge if you choose to upgrade.

4. BellMinder Specifications and Requirements

The following lists specifications and requirements of BellMinder that are necessary for the running of the system.

- 14 month schedule range
- 15 x 40 daily ring schedules at one second precision
- 40 x bell activations of 1 to 250 seconds
- Bell activations can also be infinite using continuous mode.
- Alternate schedules function for e.g. shortened afternoon on wet days, or 2 hour delay on snow days
- 1 x SPDT relay rated at 2Amps at 32 volts DC
- Wired in conjunction with the manual ringing switch or controlled relay
- Adjusts automatically daylight saving and leap years
- 14 day, time and schedule backup, no leaky batteries to replace
- Enable/Disable switch for emergencies or testing
- Schedule override operations for Continuous bell ring, Lockdown and Parent interviews
- LCD backlit display
- 12 Volt DC 110-240VAC power pack
- BellMinder Windows program, Windows 2000, 2003, XP, Vista
- English only
- Time accuracy +/- 2 min per year at 0 to +48C
- 10 meter UTP Cat5 fly lead, serial adapter between Computer and Controller
- 24 and 12 hour time modes, i.e Shows 24 Time or AM/PM times
- DD/MM/YY and MM/DD/YY dates display modes
- Audible 14 month warning
- PC Time can be synchronised with internet atomic clocks using the atomic clock synchronising program (Internet access required) then Sync with BellMinder

- RJ-45 cable connection to allow common hardware wire patching
- Power usage is <1 Watt
- Works with most USB to Serial Adaptors, and Lantronix 1100 Ethernet to Serial adaptors

4.1 PC and School Bell Requirements

The following lists the computer requirements to run BellMinder.

- PC compatible system or a portable laptop
- O/S Windows 2000, Windows Server 2000, Windows XP, Server 2003, Vista
- Internet explorer 6 or better
- Spare 9 pin COM port, or a USB to RS232 adaptor
- CD-Rom drive or network access to a CD-Rom drive

BellMinder can support bells that meet the following requirements.

- Switch based ringing system either normally open or normally closed circuit
- Access to the manual bell ringing button or switch or relay
- Replacement of current 24 hour or 7 Day timers
- Speaker announcement systems that have sounder units with on/off based activation

5. Installation Procedure

5.1 Important Notice before Installing

It is the installer's responsibility to inform the appropriate people about the installation date and time, to ensure no false fire alarms or security alarms.

The following people must be informed prior to installing the BellMinder unit to the bell circuitry.

- School staff
- Fire department (only if the Fire alarm circuit is used for class change)
- Alarm monitoring service (only if Alarm company is controlling the bells)

******* IMPORTANT NOTE: *******

The installer is responsible for any false alarms which incur fire service or security callout charges.

5.2 Installing the BellMinder Hardware

The BellMinder unit runs independently from the PC. The PC is used to control the device via a Windows program which designs the bell schedules. Once designed it is sent to the BellMinder unit.

The PC at this stage could be disconnected from the device, or remain connected for quick changes on the fly.

5.2.1 Unpacking your BellMinder

Your BellMinder will come with:

- 1 x BellMinder unit
- 1 x 12 Volt DC 110-240VAC power pack
- 1 x 10 meter Cat5e fly lead
- 1 x 3 pin female connector (used only for some Alarm based circuits for capping normally closed bell circuits during installation or servicing)
- 1 x pre-wired 9 pin female to RJ45 adaptor for serial connection to PC
- 1 x CDROM Software CD and Tutorial
- 2 x Wall Plugs and screws

5.2.2 Where to Locate or Mount your BellMinder Unit

It can be mounted on the wall the in a position on the wall near the manual bell button or on the desk beside the PC that will program the unit, or a laptop could be used then disconnected. It's really determined by the length of the wires.

You will need to consider the following:

- Good security e.g. pupils cannot easily ring the bell as a prank
- Easy unrestricted access for school office staff
- Good wiring access between the manual bell button and the PC

The cable between the PC and the BellMinder unit is using the RS232 protocol. Standard RS-232 cable is rated for 50 feet (approx 15 meters). This distance can be greatly improved by using a higher quality cable like Cat5e cable and this has worked up to 70 meters. Operating further than the RS232 specification is not supported by Techenz Ltd.

5.2.3 How to Know What Type of Bell Ringing System is installed

Warning:

Some manual bell buttons could have mains voltage across the bell switch/button contacts, if this is the case you will need to install a powered contactor. A qualified Electrician will be required to install this. See 5.2.6

Best practice is, if you are unsure of the voltage operating the manual bell switch/button, commission a qualified Electrician to inspect.

The BellMinder unit is wired in two ways to the bell system.

1. Parallel with a Normally Open (N/O) switch circuit. I.e. The bell rings when the circuit closes.
2. Series with a Normally Closed (N/C) switch circuit. I.e. The bell rings when the circuit opens. (i.e. most Fire Alarms systems are wire this way)

Note:

BellMinder relay is rated for 32 Volts to a maximum of 2 Amps. It **is not** to be used to switch 110 or 230 Volt systems directly. An electrical contactor must be used to switch higher voltages or current, see a registered electrician for this.



Note: A Multi-Meter will be required to test the installation

Step	Action
1.	Locate the office manual bell button and open out to expose wire contacts, without disconnecting any wires. Be very careful not to touch the wires or contacts with your fingers.
2.	Set the Multi-Meter to the 300 VAC range, if there is AC mains voltage across the switch contacts then test no further. You will a contactor installed by a qualified Electrician. Put the switch panel back to how it was.
3.	<p data-bbox="368 1413 453 1442">Note:</p> <p data-bbox="368 1464 1358 1554">Complete this step if there is no mains voltage across the bell switch.</p> <p data-bbox="368 1630 1353 1877">Test across the switch contacts with approx 20DC Volts range, if there is DC Volts it is a Normally Open (N/O) circuit. This is where the BellMinder Normally Open and Common connections are wired in parallel with the manual bell switch or button.</p>
4.	<p data-bbox="368 1928 453 1957">Note:</p> <p data-bbox="368 1980 1331 2018">Complete this step if there were no DC Volts across the bell</p>

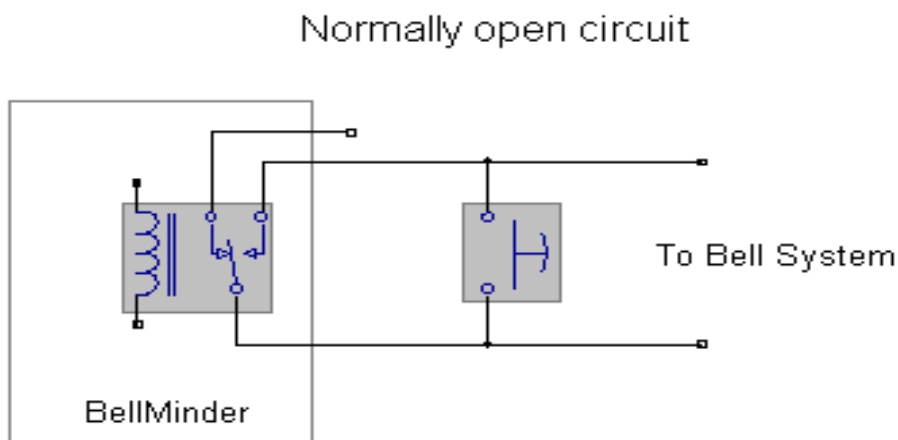
switch.

Test with an Ohm meter set at 1 K Ohm setting, if there is approximately zero to one Ohms then wire the BellMinder for the Normally Closed (N/C) circuit. This is where the BellMinder Normally Closed and Common connections are wired in series with the manual bell switch or button.

5.2.4 Wiring a Normally Open Circuit Bell System

The following steps initiate how to wire a Normally Open circuit bell system.

Step	Action
1.	Set the switch to "Disable".
2.	Connect the BellMinder Normally Open and Common connections in parallel with the bell switch.
3.	Power on BellMinder.
4.	Press the reset button.
5.	Wait for boot up.
6.	Set the switch to "Enable".
7.	Press the Bell button on the BellMinder to test bells.

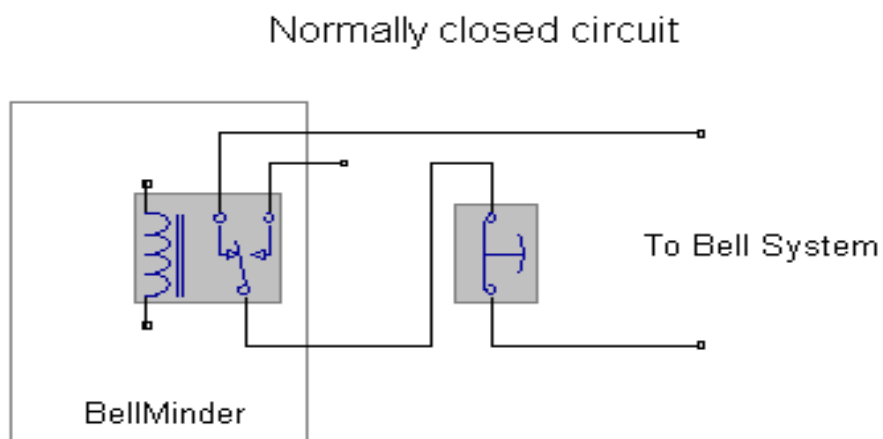


5.2.5 Wiring a Normally Closed Circuit Bell System

Warning:

As soon as you break the circuit the bells will ring, so prepare all your wires and connect in at the last step.

Step	Action
1.	Set the BellMinder switch to "Disable".
2.	Connect the BellMinder Normally Closed and Common connections, in series with the bell switch.
3.	Power on BellMinder.
4.	Press the reset button.
5.	Wait for boot up.
6.	Set the switch to "Enable".
7.	Press the Bell button on BellMinder to test the bells.



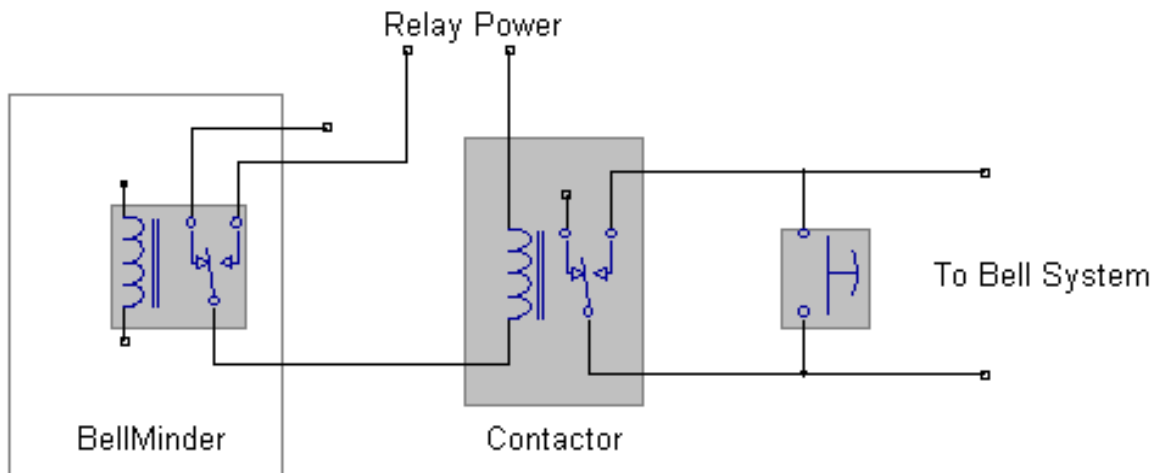
5.2.6 Wiring a BellMinder to a Contactor

Warning:

This must be done by a registered electrician.

Step	Action
1.	Set the BellMinder switch to "Disable".
2.	Connect the BellMinder Normally Open connection to one side of the relay power source. Connect the BellMinder Common connection to the contactor coil. Connect the other contactor coil to the other side of the relay power source.
3.	Connect the Contactor normally open contacts in parallel with the bell switch/button.
4.	Power on BellMinder.
5.	Press the reset button.
6.	Wait for boot up.
7.	Set the switch to "Enable".
8.	Press the Bell button on BellMinder to test the bells.

BellMinder circuit using a Contactor



Power can be used from the BellMinder to power the Contactor.

5.2.7 Connecting the BellMinder Unit to the PC

The BellMinder unit connects to a power outlet and to the computer used for the system. To connect the BellMinder unit correctly use the following steps:

Step	Action
1.	Connect one side of the 10 meter CAT5e cable to the COM port of the BellMinder unit. Figure 2 shows the BellMinder COM port to connect the cable to.

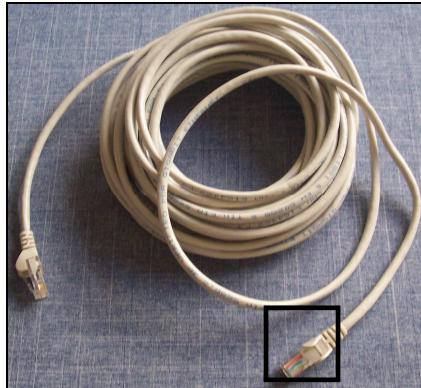


Figure 1 Cat5e Cable

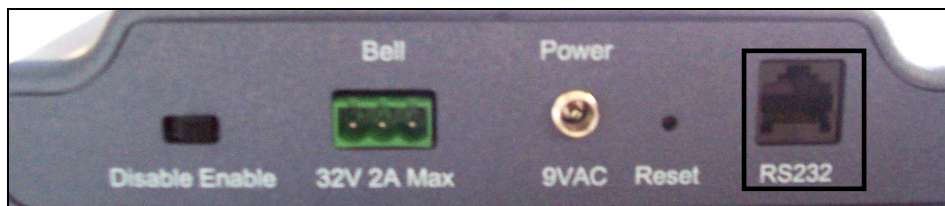
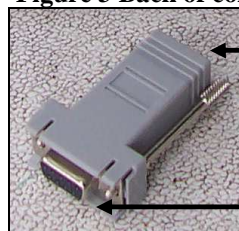


Figure 2 Back of BellMinder unit

-
2. Connect the other end of the CAT5e cable to the nine pin COM port of the PC using the RJ45 to DB9 adaptor. Figure 3 shows the location of the nine pin COM port to connect the adaptor to.



Figure 3 Back of computer



Connect Cat5e cable here

Connect to computer here

Figure 4 DB9 Adapter



Figure 5 DB9 adapter connected to computer

3. Connect the power cord to the BellMinder unit and connect to a power outlet. Figure 7 shows the location of the power connection.



Figure 6 Power cord



Figure 7 Back of the BellMinder unit

Note:

1. The BellMinder unit can also be connected to a USB to RS232 connector if the computer does not have a nine pin COM connection.
2. Neatly organise the cable around the office using cable staples or install in wall wiring from a network cabling serviceman.

CAUTION:

DO NOT RUN CABLE ACROSS THE FLOOR. THIS CAUSES A HAZARD.

5.2.8 Resetting the Unit

BellMinder has a small hole which houses a reset button. This reset button is located at the bottom of the unit. When the reset button is pressed and released, the unit will boot up into a known state.

By default the BellMinder has no schedule.

On boot up it will briefly show the firmware version number, serial number, mains frequency and then default time and date to midnight, Jan 1st 2000 and displaying "NOTSET" and will beep every 20 seconds or so.

Now the unit is ready to program using the PC software supplied with the solution. This process can be handled by the end user as opposed to the installer.

5.2.9 Schedule Override

This overrides the schedule by turning the bell on continuously until reset.

This is done by either:

- Pressing the Bell button and then the Alt button on the BellMinder unit.
- Using the BellMinder software and clicking the "Alarm" button.

It can be reset to normal operation by either:

- Pressing either the Bell or the Alt buttons on the BellMinder unit.
- Clicking the Bell in the BellMinder software.

5.3 Installing the BellMinder Software

BellMinder comes with software to operate the hardware unit. Before installing the software ensure your computer has been connected to the hardware device. To install the BellMinder software; follow the steps below:

Step	Action
1.	Insert the CD into the computers CDROM drive. The computer you install the software on will operate the BellMinder unit.
2.	Windows will automatically start extracting the necessary files for software installation. The figure below shows the screen that will appear.



Figure 8 Extracting BellMinder files for installation

-
3. The Install wizard will load to guide the installation.

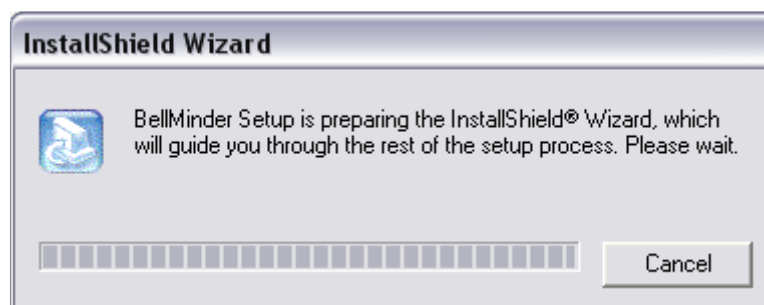


Figure 9 Installation Wizard loading

-
4. Click the Next button on the screen shown below.
-

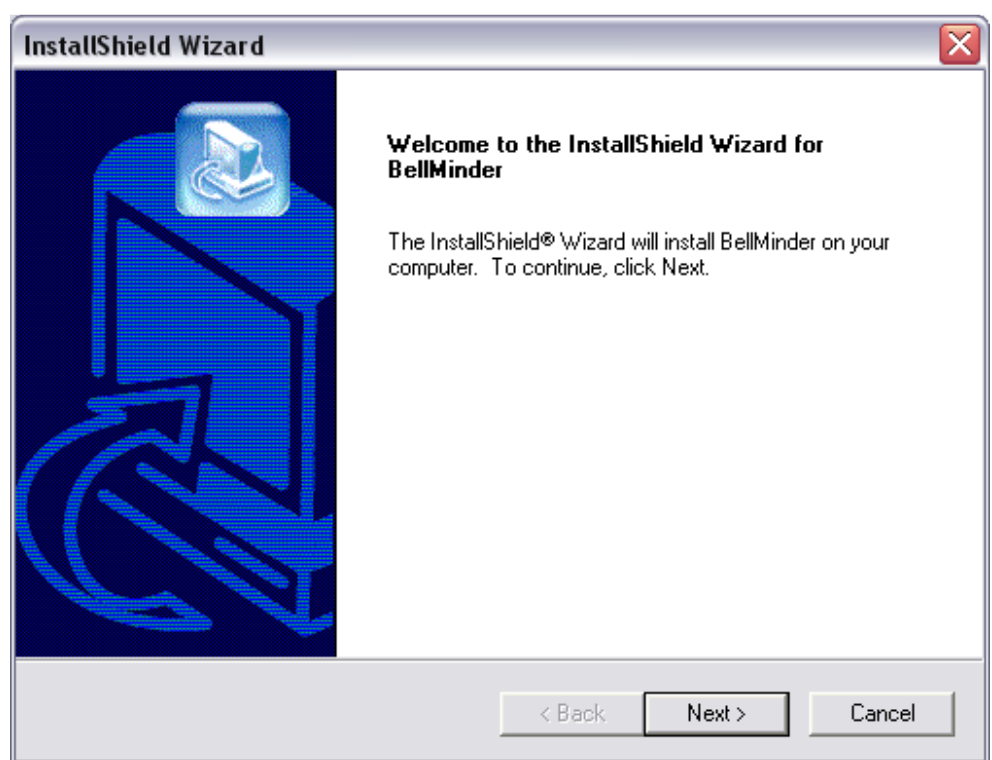


Figure 10 Installation Wizard screen

5. Click Yes to accept BellMinder terms and to proceed with the installation.

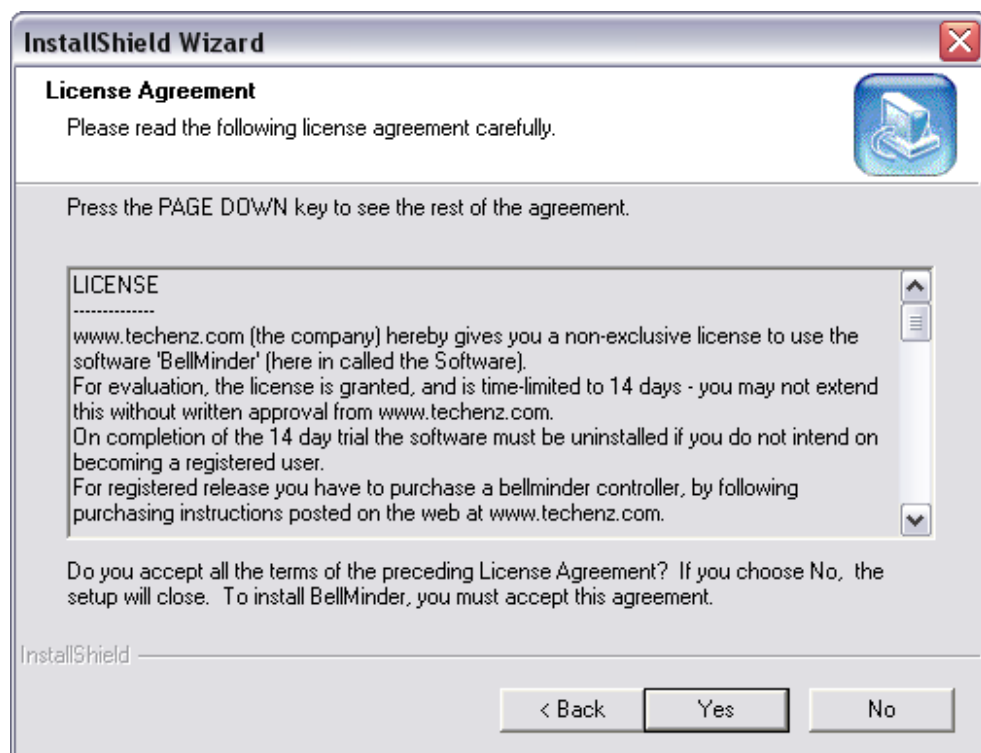


Figure 11 License Agreement

-
6. Click Next to accept the destination folder for BellMinder.

Note:

A different destination folder may be chosen by clicking the Browse button and selecting the destination then click the Next button.

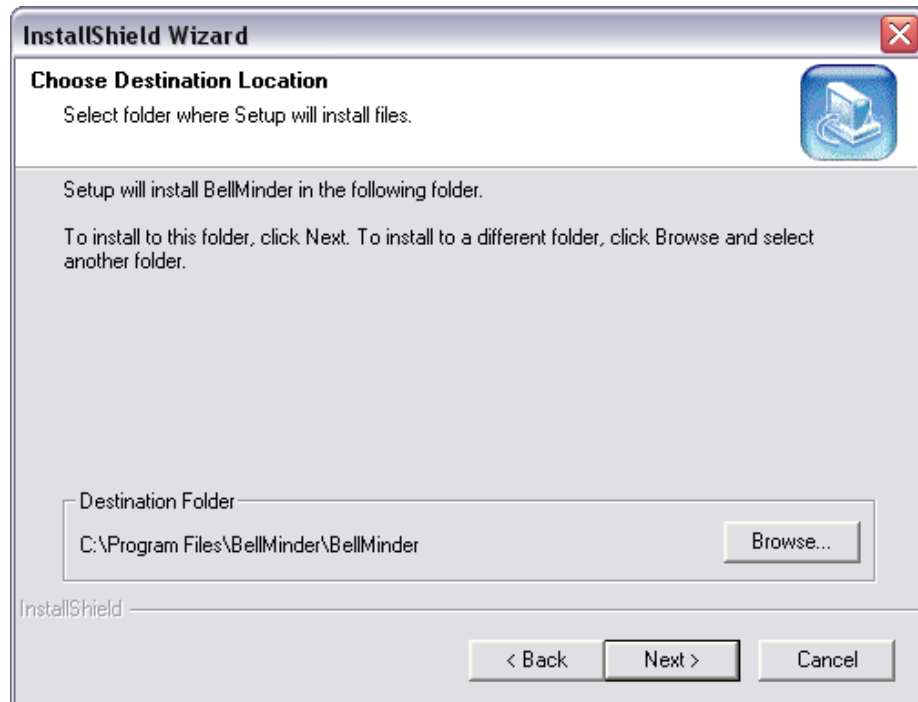


Figure 12 Selecting destination location

-
7. BellMinder will take a few minutes to install.
-

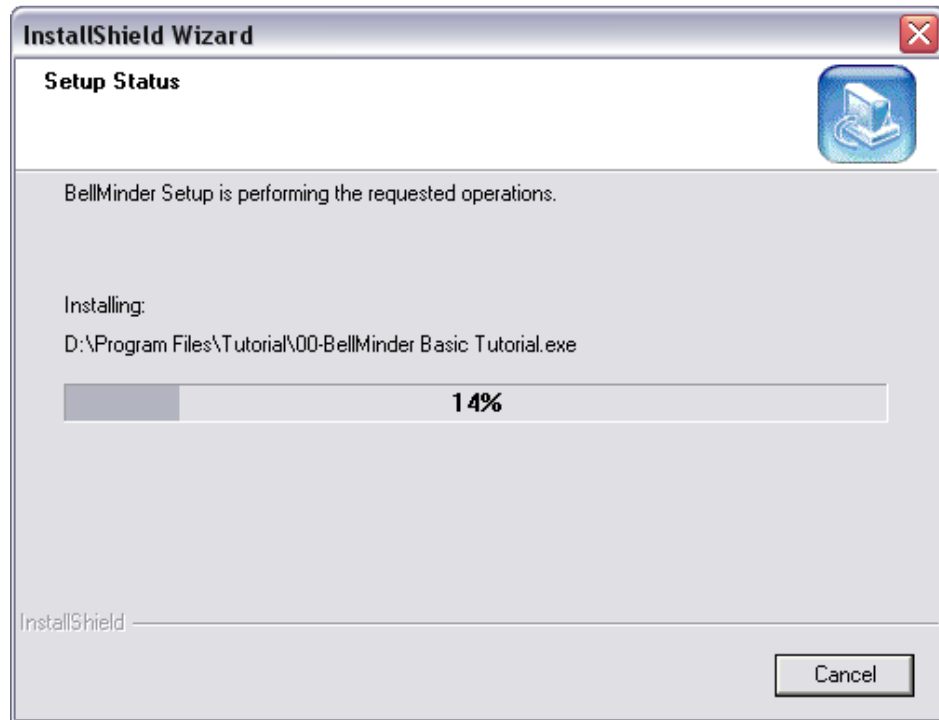


Figure 13 Installation progress

8. Ensure the Yes radio button is selected and click the Finish button.

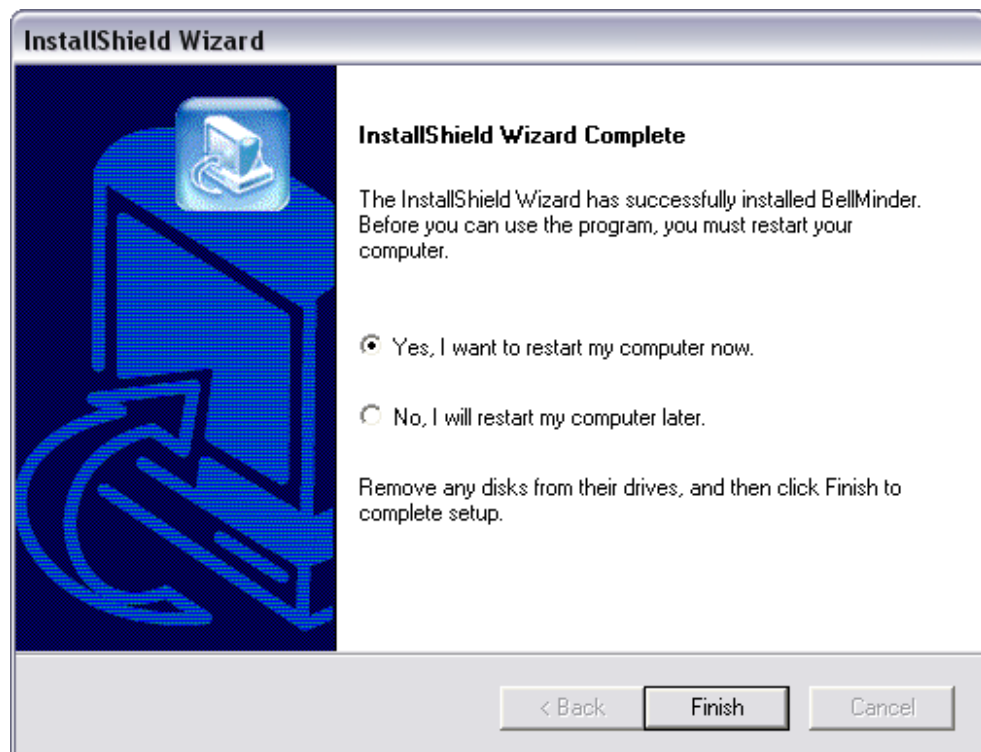


Figure 14 Finish installation screen

5.3.1 Setting the COM port

The COM port must be set in the software program to enable the software to communicate with the hardware device. Installation of both the hardware and software must be completed before setting the COM port. To set the COM port; follow the steps below:

Note:

If problems occur during the setup of the COM port see the troubleshooting section or follow the suggestion in the Auto Detection Wizard note shown in step 2.

Step	Action
1.	Click Tools and select AutoDetect COM Port.
2.	Observe the auto detection message and click the Start Detection button.

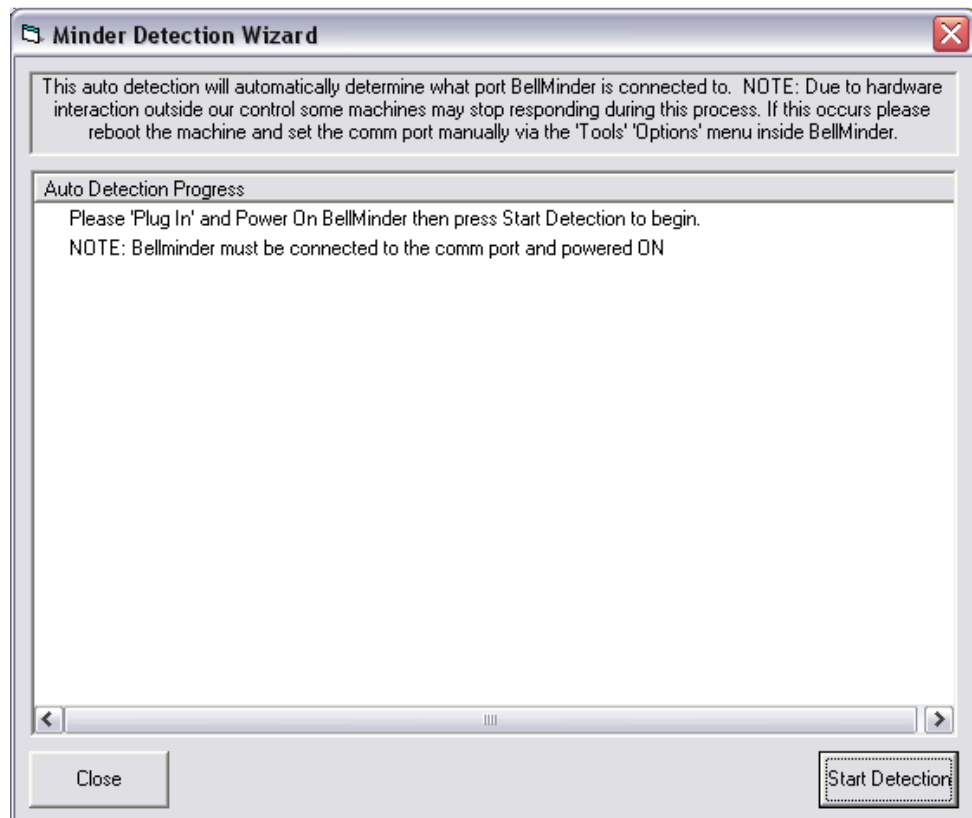


Figure 15 Detection Wizard

-
3. The Wizard will check the COM connection as shown in the screen below.
-

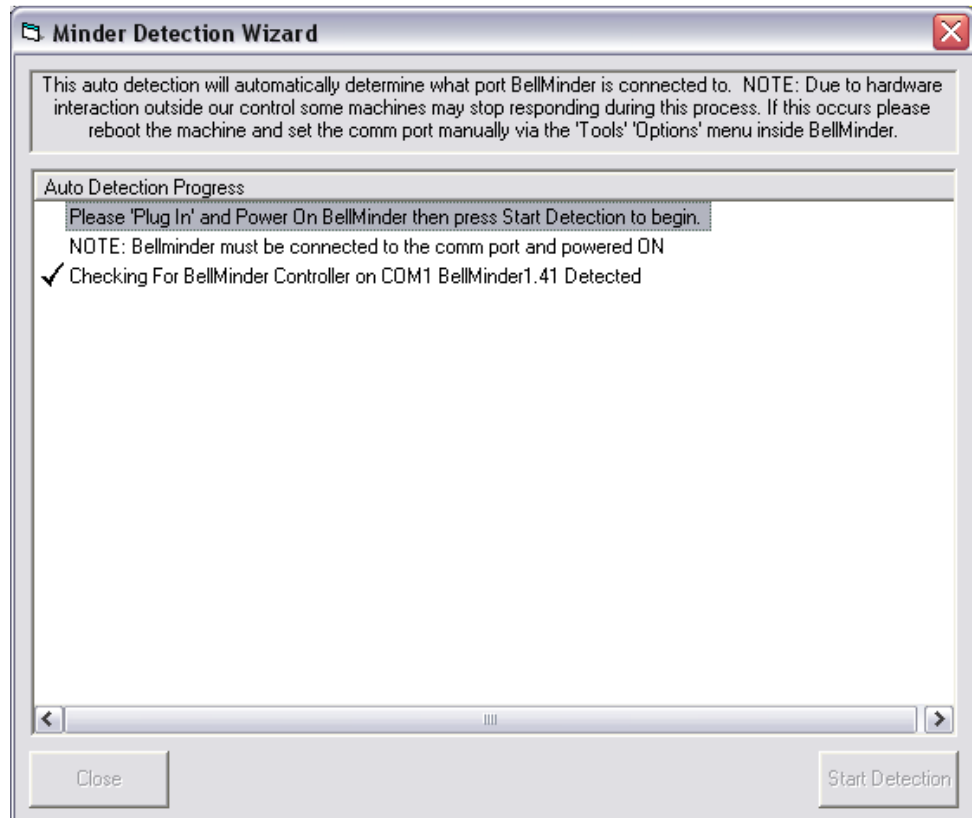


Figure 16 Auto Detection process

4. Click the OK button on the dialog box. This indicates Auto detection was successful.

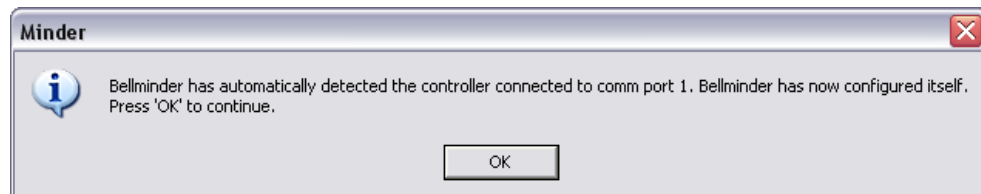


Figure 17 Successful auto detection

6. Troubleshooting

6.1 COM Port Setting

If you get a PC COM port failure message then the port maybe acquired by another program. Other programs could include a modem, camera, PDA or UPS monitoring program.

This can be tested using the HyperTerminal program. Test using the same COM port as the BellMinder. If it fails to connect then another program has the port or the port is possibly faulty. If it is still not working then see your IT professional for diagnosing the fault.

6.2 Errors in the Schedule

A possible cause of this is that the RS232 cable connecting the PC to the BellMinder unit is too long. If you need a long cable that is over 50 meters then you may have to use a RS232 line booster.

6.3 Clock Running Slowly

First check if it is just constantly 5 mins slow for example, or if is losing time for example 5 mins slow then 7 minutes slow.

If it is always a constant amount then you need to adjust a clock, either the PC time or the School time.

If the PC time cannot be altered a custom time can be set in the options menu.

If the BellMinder it is losing or gaining time, please contact us.

6.4 Lost Schedule and Time Wrong

If there is power loss the BellMinder unit can maintain the clock and schedule state for a combined time of approximately five days. After 5 days of power loss the unit will have lost the time. To correct this, reset the BellMinder unit and upload the saved schedule.

If you have frequent power outages then you might want to consider purchasing a small PC “non-online” UPS (Uninterruptible Power Supply). This can be purchased from your local PC hardware supplier or directly from Techenz Ltd. The cost of these units is approximately NZ \$250 and can remove the problem of an erratic power supply.

6.5 Daylight Saving Didn't Change the Time

Re-sync your PC time with the atomic clock (this step can be skipped) then use the BellMinder program to send new time (assuming your PC has the correct time). Re-check your daylight saving schedule settings.

Daylight time setting will change for each time zone, country or state. The BellMinder software will auto detect your daylight saving dates from your Windows software.

The usual cause is Microsoft Updates not fully installed.

Check that the Windows updates are up to date, in the last few years the Daylight savings have changed all around the world.

6.6 Time is not setting when uploading the Schedule

Some PC's time can drift widely. It is found that BellMinder has more accurate time than most PC's. By default, the BellMinder software will synchronise the time on the initial upload then bypass this step on further uploads. This setting can be changed so that the PC manages the time at each upload. The PC time must be set accurately for this.

To change this setting, go to the Tools menu then the Options menu and select “Set the controller date/time every time a schedule is sent”. (PC Managed) or “Set the controller time (only) if it is not set already”. (Control Managed).

In the Tools menu under Diagnostics the date/time can be sent to the controller manually.

7. Accessing Support

Your first port of call for any enquiries should be this manual. Check the troubleshooting section of this manual first - this covers any of the frequently asked questions that are received. If the answer is not available in the manual then you should try www.bellminder.com or www.techenz.com. These two websites have a support page and contact details.

Phone: International +64 9 274 9008 or (NZ Only) 0800 BELLMINDER
(235 564)

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